

(19) World Intellectual Property Organization  
International Bureau



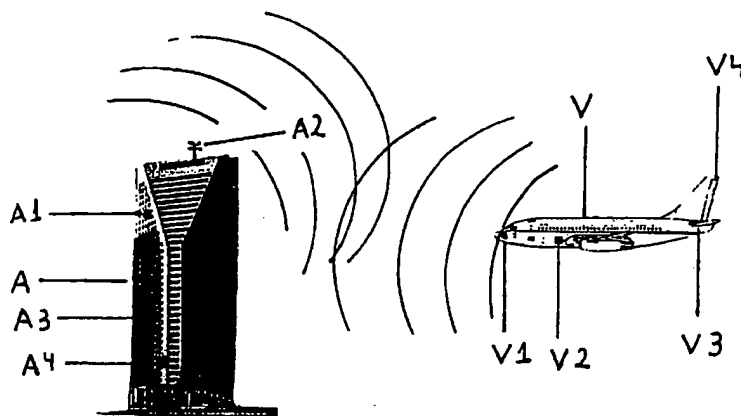
(43) International Publication Date  
8 May 2003 (08.05.2003)

PCT

(10) International Publication Number  
WO 03/038471 A1

- (51) International Patent Classification<sup>7</sup>: G01S 13/93, G08G 9/02
- (21) International Application Number: PCT/BR02/00146
- (22) International Filing Date: 31 August 2002 (31.08.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
PI 0105209-8 31 October 2001 (31.10.2001) BR
- (71) Applicants and  
(72) Inventors: BRANT, Celso, Sabrinho [BR/BR]; SCS QD2 BLD S/302, CEP-70316-900 Brazilia, DF (BR). MADEIRA, Jonahas, Gagliardi [BR/BR]; SOS 104-B-406, CEP-70313-020 Brasilia, DF (BR).
- (81) Designated States (*national*): AU, CA, CN, IL, JP, KR, MX, RU, US.
- (84) Designated States (*regional*): Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR).
- Published:  
— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: EXTERNAL CONTROL OVER AIRCRAFTS MANOEUVRES OF AIRCRAFTS, MARITIME AND MOTOR VEHICLES AND/OR RAILWAY



(57) Abstract: This invention relates to the External Control over manoeuvres of aircrafts maritime and motor vehicles and/or railway that contains a mechanism/system composed by a transceiver radio (A1) that will be installed in the object (A), represented by aircrafts, war ships, motor vehicles or railway, buildings, bridges, hydroelectric and nuclear power plants, dams, stadiums, mountains, which will have an antenna (A2) to transmit and receive electromagnetic signals, powered by an independent and autonomous module (A3), and will have an information and monitoring system (A4) to identify any approaching object (V) to the monitored object (A) as soon as it invades or gets close to the limits predetermined on a defined place and perimeter. The transceiver radio/antenna (V1) of the vehicle (V) transmits an electromagnetic signal to central computer and change of course command (V2) that overrides the manual commands and/or automatic pilot and turn the elevator servo (V3) up and the servo of rudder (V4) right or left to change the aircraft position and direction (V) to bypass the object (A); it can also has a time limit to its action over the elevator servo (V3) and the rudder (V4), after which they will return to the normal condition, under the command of the required.

WO 03/038471 A1

EXTERNAL CONTROL OVER MANOEUVRES OF AIRCRAFTS, MARITIME AND MOTOR  
VEHICLES AND/OR RAILWAY

A This invention patent is related to the External Control on Aircrafts  
Maneuver, Maritime Vehicles and Motor or Railway. It is an  
5 independent/autonomous and auto defensive system, which is design to be used  
against terrorism or in accidents.

Nowadays, the vehicles do not have any mechanism against accidental or  
intentional collisions on specific objects, movable (airplanes, war ships, motor or  
railway) or static (buildings, bridges, hydroelectric and nuclear power plants, dams,  
10 stadiums, mountains).

Hence, these objects may be targets of huge destruction, even causing  
social-political and economical instability in National States.

To solve the problems above and obtain a mechanism or system interfering in the  
vehicle way, manned or not, to make it head off without internal primary commands,  
15 the External Control on aircrafts maneuver, maritime vehicles and motor or railway  
was created.

This gadget made of a joint system and mechanism is used to stop vehicles  
from maintaining the same way. It will be used to avoid collision with the target  
through commands which will overlap the primary ones, even though they are  
20 performed by humans or in an pre programmed way.

In order to make it easier to understand this gadget, a description of it will  
come next. The reference to the drawings enclosure is presented only as a  
demonstration. It is not intended to get the present patent protection with them. The  
basic list of components with its summarized function explanation is written as well.

25 Note: Figure with no scale or proportion.

Figure 1: Panoramic view of the external control and its mechanism/system.

Basic list of the mechanism/system components:

**A1-** transceiver radio, to be installed in the object (buildings, civil or military  
facilities and/or vehicles extremely strategic importance; social or cultural.

30 **A2-** antenna;

**A3-** power source system;

**A4-** Monitoring and information system;

**V** - vehicles (aircrafts, war ships, motor or railway vehicles);

**V1-** transceiver radio and antenna (system/mechanism responsible for the reception/analysis of the signal transmitted by the transceiver radio **(A1)** when the vehicle **(V)** approaches the object **(A)**, and calculation of the minimum perimeter where the automatic change of the vehicle **(V)** course will take place;

5       **V2-** Main computer station and change of course command;

**V3-** elevator servo and determiner of the way change;

**V4-** rudder and determiner of the way change.

      The gadget contains, basically, a transceiver radio **(A1)** that will be installed in the object **(A)**, which will have an antenna **(A2)** to transmit and receive  
10    electromagnetic signals, that will be encoded to make them unbreakable and not interceptable by external agents. The system will be powered by an independent and autonomous module **(A3)**, and will have an information and monitoring system **(A4)** to identify any approaching object **(V)** and allow a defensive/offensive reaction against it as soon as it invades or get close to the limits predetermined on a defined  
15    place and perimeter.

      The transceiver radio/antenna **(V1)** of the vehicle **(V)** is a joint system and mechanism with distance gauge equipment. This device is responsible for the analysis and reception of the signal that is sent by the antenna **(A2)** when the vehicle **(V)** approaches the object. When this process takes place, the computer activates  
20    the aircraft commands **(V2)** and turns the elevator servo **(V3)** up and the servo of rudder **(V4)** right or left to change the aircraft position and direction **(V)** to bypass the object **(A)**.

      This system/mechanism has also a way to work totally independent from the automatic pilot or the manual commands of the aircraft, which guarantees its  
25    activation and operation during the whole flight/trip. It can also has a time limit to its action over the commands listed above, after which they will return to the command of the pilot.

      The system/mechanism has safety devices and alarms to prevent from changes or violation attempts to take place.

30       Once it can be easily noticed, this joint system mechanism offers a lot of advantages on the aerial, maritime or on land operations. There is no similar defensive method being used. It prevents targets from being hit. So, it provides the safeness and integrity of civil and military facilities.

The use of this joint system/mechanism will enable the creation of new security methods, and technologies. It will mainly give the safeness and tranquility to workers and users of the transportation systems mentioned above and also to those who live or work on buildings and civil or military facilities.

- 5        The joint system/mechanism has all the novelty, innovation, usefulness and industrial applicability. Therefore, it deserves the Patent privilege. It squares perfectly in all criteria required.

**CLAIMS****"EXTERNAL CONTROL ON AIRCRAFTS MANEUVER, MARITIME VEHICLES  
AND/OR MOTOR OR RAILWAY".**

- 1<sup>a</sup>) EXTERNAL CONTROL ON AIRCRAFTS MANEUVER, MARITIME VEHICLES AND MOTOR OR RAILWAY**, constituted basically by a transceiver radio **(A1)** that will be installed in the object **(A)**, which will have an antenna **(A2)** to transmit and receive electromagnetic signs, powered by an independent and autonomous module **(A3)**, and will have an information and monitoring system **(A4)** to identify any vehicle **(V)** that approaches the object **(A)** and invades the limits of a predetermined perimeter.
- 2<sup>a</sup>) EXTERNAL CONTROL ON AIRCRAFTS MANEUVER, MARITIME VEHICLES AND MOTOR OR RAILWAY**, as stated on (1<sup>a</sup>), characterized by a system/mechanism composed by a transceiver and antenna **(V1)** of the vehicle, and a distance measuring device responsible for the reception and analysis of the signal broadcasted through the antenna **(A2)** when the vehicle **(V)** approaches the object **(A)**, making the central computer and control station to activate the aircraft commands **(V2)** and turns the elevator servo **(V3)** up and the rudder **(V4)** right or left, changing the aircraft position and direction **(V)** to bypass the object **(A)**.
- 3<sup>a</sup>) EXTERNAL CONTROL ON AIRCRAFTS MANEUVER, MARITIME VEHICLES AND MOTOR OR RAILWAY**, as stated on (1<sup>a</sup>) and (2<sup>a</sup>), also characterized by an operation totally independent and autonomous from the automatic pilot of the aircraft and the manual controls performed by the pilot, which guarantees its activation and operation during the whole flight/trip, and that can also incorporate a time or angle restriction to the actuation of the elevator servo **(V3)** and the rudder **(V4)**, that allows the pilot to recover the command of the aircraft; there are safety devices and alarms to prevent and detect any tentative of changes or violation attempts to take place.
- 4<sup>a</sup>) EXTERNAL CONTROL ON AIRCRAFTS MANEUVER, MARITIME VEHICLES AND MOTOR OR RAILWAY**, as stated on (1<sup>a</sup>), (2<sup>a</sup>), and (3<sup>a</sup>), characterized by its applicability to trains, that will be equipped with a transceiver radio **(A1)** and antenna **(A2)** to transmit and receive electromagnetic signals that will be received and analyzed by a joint distance measuring device and transceiver/antenna **(V1)** that will be installed in the trains; if they come to a situation of possible collision, that will be determined through the analysis of the electromagnetic signals of each train in the computer and command

central (V2), a servo brake will be activated independent from the action of the engineer.

- 5 **5<sup>a</sup>) EXTERNAL CONTROL ON AIRCRAFTS MANEUVER, MARITIME VEHICLES AND MOTOR OR RAILWAY**, as stated on (1<sup>a</sup>), (2<sup>a</sup>), (3<sup>a</sup>) and (4<sup>a</sup>), characterized by its applicability to ships and boats, that will be equipped with a transceiver radio (A1) and antenna (A2) to transmit and receive eletromagnectic signals that will be received and analyzed by a joint distance measuring device and transceiver/antenna (V1) that will detect if they are in a collision route.

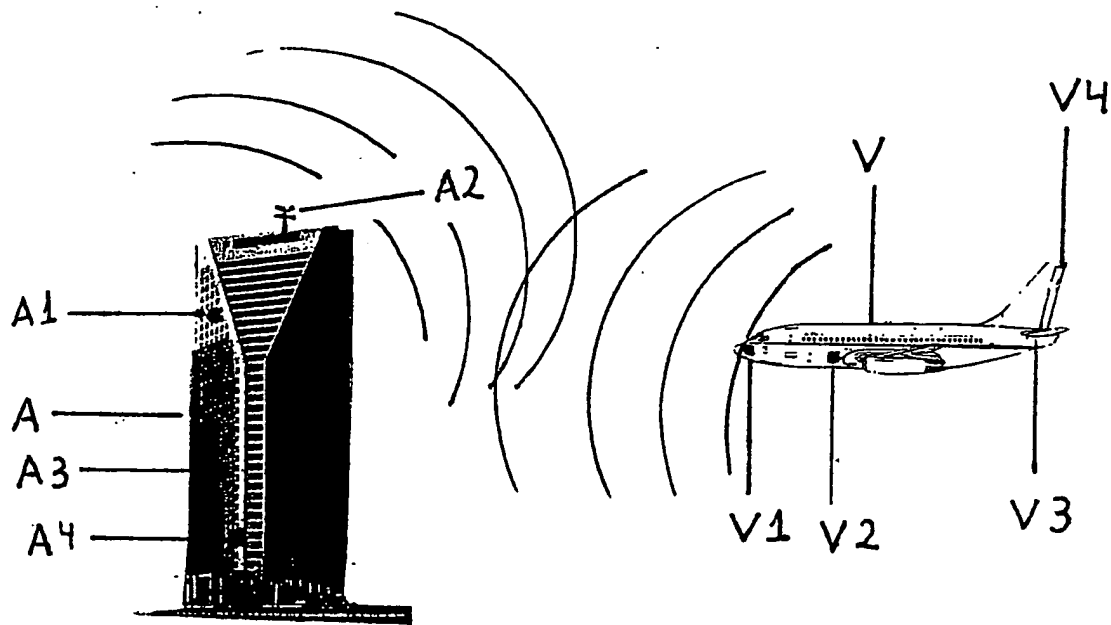


Fig. 1

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/BR 02/00146

## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: G01S 13/93, G08G 9/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: G01S 13/88, 13/91, 13/93; G08G 1/16, 3/02, 5/04, 7/02, 9/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	DE 10146167 A1 (GRENZENDORF) 13 June 2002 (13.06.02) <i>the whole document.</i>	1-5
X	EP 0526052 A2 (GEC FERRANT DEFENCE SYST.) 3 February 1993 (03.02.93) <i>fig.1, claims 1-12.</i>	1-5

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

„A“ document defining the general state of the art which is not considered to be of particular relevance

„E“ earlier application or patent but published on or after the international filing date

„L“ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

„O“ document referring to an oral disclosure, use, exhibition or other means

„P“ document published prior to the international filing date but later than the priority date claimed

„T“ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

„X“ document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

„Y“ document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

„&amp;“ document member of the same patent family

Date of the actual completion of the international search

26 February 2003 (26.02.2003)

Date of mailing of the international search report

12 March 2003 (12.03.2003)

Name and mailing address of the ISA/AT

Austrian Patent Office

Kohlmarkt 8-10; A-1014 Vienna

Facsimile No. 1/53424/535

Authorized officer

FUSSY S.

Telephone No. 1/53424/328



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/BR 02/00146

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
DB	A1	10146167	13-06-2002	none			
EP	A2	526052	03-02-1993	CA	AA	2074602	28-01-1993
EP	A3	526052	17-03-1993	GB	A0	9116294	18-09-1991
				GB	A1	2258362	03-02-1993
				US	A	5252978	12-10-1993